

13406-009wax1

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: DANIEL E. ALTMAN
KNOBBE MARTENS OLSON & BEAR, LLP
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FOURTEENTH FLOOR
IRVINE, CA 92614

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing
(day/month/year)

08 JUL 2008

Applicant's or agent's file reference

FOUNDRY007VP

International application No.

PCT/US2008/060929

FOR FURTHER ACTION See paragraphs 1 and 4 below

International filing date
(day/month/year)

18 April 2008

Applicant

THE FOUNDRY, INC.

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis 1 and 90bis 3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the PCT Applicant's Guide, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISAUS
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenhaver

Telephone No. 571-272-7774

Form PCT/ISA/220 (January 2004)

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference FOUNDRY007VP	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below	
International application No. PCT/US2008/060929	International filing date (day/month/year) 18 April 2008	(Earliest) Priority Date (day/month/year) 19 April 2007
Applicant THE FOUNDRY, INC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II)

3. ☐ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

- ☐ the text is approved as submitted by the applicant
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☐ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. _____
☐ as suggested by the applicant
☐ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention
b. ☐ none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2008/060929

A. CLASSIFICATION OF SUBJECT MATTER

IPC(B) - A61B 18/00 (2008.04)

USPC - 606/41

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(B) - A61B 18/00, 18/12, 18/14, 18/18, 18/20; A61N 1/28, 1/40, 5/02, 5/04 (2008.04)

USPC - 606/33, 41, 607/101-102, 104, 156

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0210214 A1 (KNOWLTON) 21 October 2004 (21.10.2004) entire document	1, 7, 9, 21-22, 27, 29, 31, 34-39, 42-45
Y		2-6, 8, 10-20, 28, 30, 32-33, 40-41
Y	US 2007/0016032 A1 (AKNINE) 18 January 2007 (18.01.2007) entire document	2, 6, 8, 30
Y	US 2007/0060989 A1 (DEEM et al) 15 March 2007 (15.03.2007) entire document	18-20, 23-26, 28, 32-33
Y	US 2006/0271028 A1 (ALTSHULER et al) 30 November 2006 (30.11.2006) entire document	10-17, 23-26
Y	US 6,425,912 B1 (KNOWLTON) 30 July 2002 (30.07.2002) entire document	40-41

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

12 June 2008

Date of mailing of the international search report

08 JUL 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenhaver

PCT Handbook 571-272-4300

PCT OSP 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: DANIEL ALTMAN
KNOBBE MARTENS OLSON & BEAR, LLP
FOURTEENTH FLOOR
2040 MAIN STREET
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

08 JUL 2008

Applicant's or agent's file reference
FOUNDRY007VP

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2008/060929

International filing date (day/month/year)
18 April 2008

Priority date (day/month/year)
19 April 2007

International Patent Classification (IPC) or both national classification and IPC
IPC(B) - A61B 18/00 (2008.04)
USPC - 606/41

Applicant
THE FOUNDRY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion
12 June 2008

Authorized officer
Blaine Coppenheaver

PCT Helpdesk: 571-272-4300
PCT ODP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2006/069829

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis 1(a)).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ on paper
☐ in electronic form
 - c. time of filing/furnishing
☐ contained in the international application as filed
☐ filed together with the international application in electronic form
☐ furnished subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/06929

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
1. Statement	Novelty (N)	Claims	2-6, 8, 10-20, 23-26, 28, 30, 32-33, 40-41	YES
		Claims	1, 7, 9, 21-22, 27, 29, 31, 34-39, 42-45	NO
	Inventive step (IS)	Claims	None	YES
		Claims	1-45	NO
	Industrial applicability (IA)	Claims	1-45	YES
		Claims	None	NO
2. Citations and explanations:				
<p>Claims 1, 7, 9, 21-22, 27, 29, 31, 34-39 and 42-45 lack novelty under PCT Article 33(2) as being anticipated by Knowlton (US 2004/0210214), hereinafter referred to as Knowlton '214.</p> <p>Referring to claim 1, Knowlton '214 discloses a system for treating a skin tissue of a patient (abstract) comprising: a microwave energy generator (claim 1; claim 7); a microwave antenna configured for placement proximate to the skin tissue of the patient (fig. 1; para. 0108; para. 0103; para. 0121; para. 0150); a cooling element configured for placement in contact with the skin tissue of the patient (para. 0183; claim 11; para. 0016; para. 0099; para. 0109; para. 0111-0112); and a suction element configured for elevating the skin tissue and placing the skin tissue in contact with the cooling element (fig. 17; para. 0060; para. 0116; fig. 2B; para. 0183; claim 11; para. 0016; para. 0099; para. 0109; para. 0111-0112); wherein the microwave antenna is operatively coupled to the microwave energy generator (para. 0121; claim 1; claim 7; para. 0108); and wherein the microwave antenna is configured to deliver energy to the skin tissue sufficient to create a thermal effect in a target tissue within the skin tissue (para. 0121; para. 0150; para. 0108; abstract; para. 0099).</p> <p>Referring to claim 7, Knowlton '214 discloses wherein the microwave energy generator is configured to deliver microwave energy at a frequency of about 2.45 GHz (para. 0121).</p> <p>Referring to claim 9, Knowlton '214 discloses wherein the cooling element is selected from the group consisting of a solid coolant, liquid spray, gaseous spray, cooling plate, thermo-electric cooler and combinations thereof (para. 0114; para. 0112).</p> <p>Referring to claim 21, Knowlton '214 discloses the system further comprising a temperature sensor (para. 0125).</p> <p>Referring to claim 22, Knowlton '214 discloses wherein the temperature sensor comprises a thermocouple configured for monitoring the temperature of the skin tissue (para. 0125).</p> <p>Referring to claim 27, Knowlton '214 discloses a method of creating a subdermal lesion in a skin tissue of patient (para. 0225) comprising: delivering microwave energy to the skin tissue (claim 1; claim 7); and applying a cooling element to the skin tissue (para. 0183; claim 11; para. 0016; para. 0099; para. 0109; para. 0111-0112); wherein the microwave energy is delivered at a power, frequency and duration and the cooling element is applied at a temperature and a duration sufficient to create a lesion at the interface between the epidermis layer and subcutaneous layer in the skin tissue while minimizing thermal alteration to non-target tissue in the epidermis and dermis layers of the skin tissue (para. 0099; claim 7; para. 0216; para. 0206; para. 0254; para. 0258; para. 0261; claim 20).</p> <p>Referring to claim 29, Knowlton '214 discloses a method of treating a skin tissue of a patient (abstract) comprising: positioning a microwave energy delivery applicator over the skin tissue (fig. 1; fig. 12B; para. 0108; para. 0103; para. 0121; para. 0150); securing the skin tissue proximate to the microwave energy delivery applicator (figs. 16-17; para. 0149-0150); cooling the surface of the skin tissue (para. 0183; claim 11; para. 0016; para. 0099; para. 0109; para. 0111-0112); and delivering energy via the microwave energy delivery applicator to the skin tissue sufficient to create a thermal effect in a target tissue within the skin tissue (para. 0121; para. 0150; para. 0108; abstract; para. 0099).</p> <p>Referring to claim 31, Knowlton '214 discloses wherein securing the skin tissue proximate to the microwave energy delivery applicator further comprises applying suction to the skin tissue (fig. 17; para. 0060; para. 0116).</p> <p>Referring to claim 34, Knowlton '214 discloses wherein cooling the surface of the skin tissue further comprises positioning a cooling element in contact with the skin surface (para. 0183; claim 11; para. 0016; para. 0099; para. 0109; para. 0111-0112).</p> <p>Referring to claim 35, Knowlton '214 discloses wherein cooling the surface of the skin tissue further comprises conductively cooling the skin surface (para. 0183; fig. 2B; para. 0104; para. 0112).</p> <p>Referring to claim 36, Knowlton '214 discloses wherein cooling the surface of the skin tissue further comprises conductively cooling the skin surface (para. 0114; para. 0112).</p> <p>Referring to claim 37, Knowlton '214 discloses wherein cooling the surface of the skin tissue further comprises conductively and convectively cooling the skin surface (para. 0112; para. 0183; para. 0104).</p> <p>Referring to claim 38, Knowlton '214 discloses wherein the target tissue within the skin tissue is selected from the group consisting of collagen, hair follicles, cellulite, eccrine glands, apocrine glands, sebaceous glands, epidermal veins and combinations thereof (para. 0148; para. 0205; para. 0016-0019).</p> <p>Referring to claim 39, Knowlton '214 discloses wherein the target tissue within the skin tissue comprises the interface between the dermal layer and subcutaneous layer of the skin tissue (para. 0099 and 0103).</p> <p>Referring to claim 42, Knowlton '214 discloses the method further comprising monitoring a diagnostic parameter of the skin tissue (para. 0101; para. 0113; para. 0125).</p> <p>Referring to claim 43, Knowlton '214 discloses wherein the diagnostic parameter is selected from the group consisting of impedance, temperature, and reflected power (para. 0113; para. 0125).</p>				
Continued in Supplemental Box				

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/060929

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box No. V

Referring to claim 44, Knowlton '214 discloses the method further comprising administering to the patient a medication selected from the group consisting of anesthetics, steroids, and antibiotics (fig. 30, step 4; para. 0021 and 0022).

Referring to claim 45, Knowlton '214 discloses wherein administering medication to the patient further comprises administering the medication orally, topically or via injection (fig. 30, step 4; para. 0022; fig. 31, step 4).

Claims 2-6, 8 and 30 lack an inventive step under PCT Article 33(3) as being obvious over Knowlton '214 in view of Alkine.

Referring to claim 2, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the microwave antenna is selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, patch, Vivaldi and combinations thereof.

However, Alkine teaches wherein the microwave antenna is selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, patch, Vivaldi and combinations thereof (para. 0006; para. 0022; para. 0027). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the microwave antenna is selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, patch, Vivaldi and combinations thereof as taught by Alkine. The motivation for doing so would be to provide a better method of delivering microwave energy to the treatment site.

Referring to claim 3, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the microwave antenna is a waveguide antenna. However, Alkine teaches wherein the microwave antenna is a waveguide antenna (para. 0006; para. 0022; para. 0027). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the microwave antenna is a waveguide antenna as taught by Alkine. The motivation for doing so would be to provide a better method for delivering microwave energy to the treatment site.

Referring to claim 4, Knowlton '214 teaches the system as shown in claim 3 above. Knowlton '214 does not teach wherein the waveguide antenna comprises an array of waveguide antennas. However, Alkine teaches wherein the waveguide antenna comprises an array of waveguide antennas as taught by Alkine. The motivation for doing so would be to provide a better method for delivering microwave energy to the treatment site.

Referring to claim 5, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the microwave antenna is a single slot antenna. However, Alkine teaches wherein the microwave antenna is a single slot antenna (para. 0006). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the microwave antenna is a single slot antenna as taught by Alkine. The motivation for doing so would be to provide a better method for delivering microwave energy to the treatment site.

Referring to claim 6, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the microwave antenna comprises a dual slot antenna. However, Alkine teaches wherein the microwave antenna comprises a dual slot antenna (para. 0006). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the microwave antenna comprises a dual slot antenna as taught by Alkine. The motivation for doing so would be to provide a better method for delivering microwave energy to the treatment site.

Referring to claim 8, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the microwave energy generator is configured to deliver microwave energy at a frequency of about 5.8 GHz. However, Alkine teaches wherein the microwave energy generator is configured to deliver microwave energy at a frequency of about 5.8 GHz (para. 0031). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the microwave energy generator is configured to deliver microwave energy at a frequency of about 5.8 GHz as taught by Alkine. The motivation for doing so would be to provide a high enough frequency in order to treat the target tissue.

Referring to claim 29, Knowlton '214 teaches the system as shown in claim 29 above. Knowlton '214 does not teach wherein positioning a microwave energy delivery applicator over the skin tissue further comprises positioning over the skin tissue a microwave antenna selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, helical, patch, Vivaldi and combinations thereof. However, Alkine teaches wherein positioning a microwave energy delivery applicator over the skin tissue further comprises positioning over the skin tissue a microwave antenna selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, helical, patch, Vivaldi and combinations thereof (para. 0006). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein positioning a microwave energy delivery applicator over the skin tissue further comprises positioning over the skin tissue a microwave antenna selected from the group consisting of single slot, multiple slot, waveguide, horn, printed slot, helical, patch, Vivaldi and combinations thereof as taught by Alkine. The motivation for doing so would be to provide a better method for delivering microwave energy to the treatment site.

Claims 19-20, 28 and 32-33 lack an inventive step under PCT Article 33(3) as being obvious over Knowlton '214 in view of Deem et al. Referring to claim 19, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the suction element comprises a suction chamber configured to acquire at least a portion of the skin tissue. However, Deem et al. teaches wherein the suction element comprises a suction chamber configured to acquire at least a portion of the skin tissue (2004; figs. 7A-7B; para. 0041; para. 0080). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the suction element comprises a suction chamber configured to acquire at least a portion of the skin tissue as taught by Deem et al. The motivation for doing so would be to provide a better method for ensuring the target skin tissue is in contact with the energy delivery device.

Continued in Next Supplemental Box

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2006/000929

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Previous Supplemental Box

Referring to claim 19, Knowlton '214 teaches the system as shown in claim 18 above. Knowlton '214 does not teach wherein the suction chamber is operatively coupled to a vacuum source. However, Deem et al. teaches wherein the suction chamber is operatively coupled to a vacuum source (para. 0030; para. 0053). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the suction chamber is operatively coupled to a vacuum source as taught by Deem et al. The motivation for doing so would be to provide a better method for providing subatmospheric pressure.

Referring to claim 20, Knowlton '214 teaches the system as shown in claim 18 above. Knowlton '214 does not teach wherein the suction chamber is further configured with at least one tapered wall. However, Deem et al. teaches wherein the suction chamber is further configured with at least one tapered wall (264; figs. 7A-7B). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the suction chamber is further configured with at least one tapered wall as taught by Deem et al. The motivation for doing so would be to provide a better design for the suction chamber.

Referring to claim 28, Knowlton '214 teaches a method of reducing sweat production in a patient (para. 0145), comprising: identifying an area of skin to be treated (claim 1); cooling a first layer of the skin via a cooling element (para. 0216; para. 0093); and delivering microwave energy to a second layer of skin containing sweat glands sufficient to thermally alter the sweat glands while the first layer of skin is protectively cooled (para. 0216; claim 7; para. 0146; para. 0093), the second layer deeper than the first layer relative to the skin surface (para. 0216; para. 0093). Knowlton '214 does not teach the method further comprising activating a vacuum pump to acquire the skin within a suction chamber; and deactivating the vacuum pump to release the skin. However, Deem et al. teaches the method further comprising activating a vacuum pump to acquire the skin within a suction chamber (264; figs. 7A-7B; para. 0041; para. 0080-0061); and deactivating the vacuum pump to release the skin (264; figs. 7A-7B; para. 0041; para. 0060-0051). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Knowlton '214 to further comprise activating a vacuum pump to acquire the skin within a suction chamber; and deactivating the vacuum pump to release the skin as taught by Deem et al. The motivation for doing so would be to provide a better method for ensuring the target skin tissue is in contact with the energy delivery device.

Referring to claim 32, Knowlton '214 teaches the method as shown in claim 31 above. Knowlton '214 does not teach wherein applying suction to the skin tissue further comprises at least partially acquiring the skin tissue within a suction chamber adjacent to the energy delivery applicator. However, Deem et al. teaches wherein applying suction to the skin tissue further comprises at least partially acquiring the skin tissue within a suction chamber adjacent to the energy delivery applicator (264; figs. 7A-7B; para. 0041; para. 0080-0061; para. 0028; para. 0078). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Knowlton '214 wherein applying suction to the skin tissue further comprises at least partially acquiring the skin tissue within a suction chamber adjacent to the energy delivery applicator as taught by Deem et al. The motivation for doing so would be to provide a better method for ensuring the target skin tissue is in contact with the energy delivery device.

Referring to claim 33, Knowlton '214 teaches the method as shown in claim 29 above. Knowlton '214 does not teach wherein securing the skin tissue further comprises elevating the skin tissue. However, Deem et al. teaches wherein securing the skin tissue further comprises elevating the skin tissue (figs. 7A-7B; para. 0041; para. 0060). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Knowlton '214 wherein securing the skin tissue further comprises elevating the skin tissue as taught by Deem et al. The motivation for doing so would be to provide a better method for ensuring the target skin tissue is in contact with the energy delivery device.

Claims 10-17 lack an inventive step under PCT Article 33(3) as being obvious over Knowlton '214 in view of Altshuler et al.

Referring to claim 10, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the cooling element comprises a thermally-conductive plate. However, Altshuler et al. teaches wherein the cooling element comprises a thermally-conductive plate (para. 0099). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the cooling element comprises a thermally-conductive plate as taught by Altshuler et al. The motivation for doing so would be to provide a better method for cooling the energy delivery device and the tissue.

Referring to claim 11, Knowlton '214 teaches the system as shown in claim 10 above. Knowlton '214 does not teach wherein the thermally-conductive plate is substantially transparent to microwave energy. However, Altshuler et al. teaches wherein the thermally-conductive plate is substantially transparent to microwave energy (para. 0099). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the thermally-conductive plate is substantially transparent to microwave energy as taught by Altshuler et al. The motivation for doing so would be to provide a better method for cooling the energy delivery device and the tissue while still permitting the microwaves to pass through.

Referring to claim 12, Knowlton '214 teaches the system as shown in claim 1 above. Knowlton '214 does not teach wherein the thermally-conductive plate comprises a ceramic. However, Altshuler et al. teaches wherein the thermally-conductive plate comprises a ceramic (para. 0099). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the thermally-conductive plate comprises a ceramic as taught by Altshuler et al. The motivation for doing so would be to provide a better method for cooling the energy delivery device and the tissue while still permitting the microwaves to pass through.

Referring to claim 13, Knowlton '214 teaches the system as shown in claim 10 above. Knowlton '214 does not teach wherein the cooling element further comprises a flow chamber adjacent to the thermally-conductive plate and wherein the flow chamber is configured to retain a liquid coolant. However, Altshuler et al. teaches wherein the cooling element further comprises a flow chamber adjacent to the thermally-conductive plate and wherein the flow chamber is configured to retain a liquid coolant (para. 0106). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the cooling element further comprises a flow chamber adjacent to the thermally-conductive plate and wherein the flow chamber is configured to retain a liquid coolant as taught by Altshuler et al. The motivation for doing so would be to provide a better method for cooling the energy delivery device and the tissue.

Continued in Next Supplemental Box

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2008/060929

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Previous Supplemental Box

Referring to claim 14, Knowlton '214 teaches the system as shown in claim 13 above. Knowlton '214 does not teach wherein the liquid coolant is configured to flow through the flow chamber, thereby cooling the thermally-conductive plate. However, Altshuler et al. teaches wherein the liquid coolant is configured to flow through the flow chamber, thereby cooling the thermally-conductive plate (para. 0105-0106; para. 0107; para. 0095-0099). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Knowlton '214 wherein the liquid coolant is configured to flow through the flow chamber, thereby cooling the thermally-conductive plate as taught by Altshuler et al. The motivation for doing so would be to provide a better method for cooling the energy delivery device and the tissue.

Referring to claim 15, Knowlton '214 teaches wherein the liquid coolant is selected from the group consisting of water, deionized water, alcohol, oil and combinations thereof (para. 0112).

Referring to claim 16, Knowlton '214 teaches wherein the liquid coolant comprises deionized water (para. 0112).

Referring to claim 17, Knowlton '214 teaches wherein the liquid coolant further comprises alcohol (para. 0112).

Claims 40-41 lack an inventive step under PCT Article 33(3) as being obvious over Knowlton '214 in view of Knowlton et al. (US 6,425,912 B1), hereinafter referred to Knowlton '912.

Referring to claim 40, Knowlton '214 teaches the method as shown in claim 29 above. Knowlton '214 does not teach wherein the thermal effect in the target tissue comprises thermal alteration of at least one sweat gland. However, Knowlton '912 teaches wherein the thermal effect in the target tissue comprises thermal alteration of at least one sweat gland (col. 7, lines 35-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Knowlton '214 wherein the thermal effect in the target tissue comprises thermal alteration of at least one sweat gland as taught by Knowlton '912. The motivation for doing so would be to provide a better method for reducing excessive sweating.

Referring to claim 41, Knowlton '214 teaches the method as shown in claim 29 above. Knowlton '214 does not teach wherein the thermal effect in the target tissue comprises ablation of at least one sweat gland. However, Knowlton '912 teaches wherein the thermal effect in the target tissue comprises ablation of at least one sweat gland (col. 7, lines 35-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Knowlton '214 wherein the thermal effect in the target tissue comprises ablation of at least one sweat gland as taught by Knowlton '912. The motivation for doing so would be to provide a better method for reducing excessive sweating.

Claims 23-26 lack an inventive step under PCT Article 33(3) as being obvious over Altshuler et al. in view of Deem et al.

Referring to claim 23, Altshuler et al. teaches a microwave energy delivery apparatus for non-invasively treating a skin tissue of a patient (abstract; para. 0058) comprising: a thermally-conductive plate adjacent to the microwave antenna (para. 0099-0100; fig. 1); and wherein the thermally-conductive plate is configured to contact the skin tissue, cool the skin tissue and physically separate the skin tissue from the microwave antenna (para. 0099-0100; fig. 1; para. 0105-0106). Altshuler et al. does not teach the apparatus further comprising a suction chamber; and wherein the suction chamber is configured to at least partially acquire the skin tissue and bring the skin tissue in contact with the cooling plate. However, Deem et al. teaches the apparatus further comprising a suction chamber (264; para. 0080); and wherein the suction chamber is configured to at least partially acquire the skin tissue and bring the skin tissue in contact with the cooling plate (264; figs. 7A-7B; para. 0041; para. 0080-0081; para. 0028; para. 0078). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Altshuler et al. to further comprise a suction chamber; and wherein the suction chamber is configured to at least partially acquire the skin tissue and bring the skin tissue in contact with the cooling plate as taught by Deem et al. The motivation for doing so would be to provide a better method for ensuring the target skin tissue is in contact with the energy delivery device.

Referring to claim 24, Altshuler teaches the apparatus further comprising a shield configured for containing excess energy fields (3; para. 0095; para. 0105).

Referring to claim 25, Altshuler teaches wherein the shield is comprised of a reflective material (para. 0095).

Referring to claim 26, Altshuler teaches wherein the shield is comprised of an energy absorbent material (para. 0095).

Claims 1-45 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.